) 83182 *83182*

PM

-664-203 Accept *N900040100* Setup Start *NS1*

ube Aft Stop *NS2*

Start Date: 13/04/2012 **Start Qty:** 1.00 *1*

Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*

Reference:

Cust Item ID:

Customer:

Approvals: **Process Plan:** MLJ **Date:** 12/04/13 **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr: D412-664-243	Revision Nbr: E/DEO								
100		0.00							
100	DOCUMENT CONTROL								
DC	**Memo**	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D412-664-203 CHG 008								
110		0.00							
110	Packaging								
Packaging	**Memo**	0.00							
Packaging									
120		0.00							
120	BENDING MACHINE - CROSSTUBES								
CNC Bend 2	**Memo**	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D412-664-243 using CNC bender program 412-aft and Folio FT010								

MLJ 12-5-2

MO 12-4-18

MO/JW 12-4-2019

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	QC

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 83182

April-13-12 12:58:33 PM

83182

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Crosstube Aft

Start Date: 13/04/2012 **Start Qty:** 1.00 *1*

Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*

Reference:

Cust Item ID:

Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC15- Crosstube Dimensional Check	0.00							
130									
QC	**Memo**	0.00							
Quality Control									
140		0.00							
140	Crosstubes								
Crosstubes	**Memo**	0.00							
Crosstubes	1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551and drill table DT8577 using #9 holes as per QSI 10 to install towers.								
	2-Ream hole to finish size in tube as per Dwg D412-664-243using drill Jig DT8550 & DT8551.Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.								
	3-SCRIBE PART # & BATCH #								
	4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243								

12/04/19

MO/JW 12-4-19

MO 12-4-19

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 83182

April-13-12 12:58:33 PM

83182

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*

Revision ID: **Stop** *NS2*

Item Name: Crosstube Aft

Start Date: 13/04/2012 **Start Qty:** 1.00 *1*

Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*

Reference:

Cust Item ID:

Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00							
150 HandFXtube	**Memo**	0.00				_____	MD		12-4-19
Hand Finishing Crosstubes									
160	QC3- Inspect Part Finish	0.00							
160 QC	**Memo**	0.00				_____	_____	_____	_____
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
170 QC	**Memo**	0.00				_____	_____	_____	_____
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Aft
Start Date: 13/04/2012 **Start Qty:** 1.00 *1*
Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*
Reference:
Cust Item ID:
Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
180						CL 12/04/20	1		
Outsource2	**Memo**	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038Or Issue P/O: 16780 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190		0.00							
190	Packaging								
Packaging	**Memo**	0.00				12/4/23	1		
Packaging	Inspect for transit damage Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
200									
QC	**Memo**	0.00 5/2/23							
Quality Control	Inspect for damage & ensure results are as per Dwg D412-664-203								

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Aft
Start Date: 13/04/2012 **Start Qty:** 1.00 *1*
Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*
Reference:
Cust Item ID:
Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210		0.00							
210	SprayPaint					AP	12-4-23		
SprayPaint	**Memo**	0.00							
Spray Painting	***Mask underside of crosstube as shown***								
	1-Prime inside and outside crosstube as per QSI 005 4.2								
	2-Paint outside crosstube with White Imron as per DEO D412-664-243 and QSI 005 4.2								
	PRIME: 121077 Start Time: 7:45 Fininsh Time: 8:45 PAINT: 120985 Start Time: 3:00 Finish Time: 4:00		clear: 120858 start: 10:00 Finish: 11:00						
220	QC14- Inspect Spray Paint	0.00							
220									
QC	**Memo**	0.00							
Quality Control	Then, Wrap in plastic bag to protect from scratches								

12-04-24 (1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Aft
Start Date: 13/04/2012 **Start Qty:** 1.00 *1* **Cust Item ID:**
Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1* **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** *NR1*
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
230	Crosstubes					AS	12-4-26		
Crosstubes	**Memo**	0.00							
Crosstubes	Assemble as per Dwg D412-664-203 1- Install chafing shield as per DEO D412-664-243.Top holes should be facing up. A/R Proseal 890 Batch: 121287 EXP: 11/12 2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe 3-Install support with Scotch-Weld DP460 and install clamps as per DEO Dwg D12-664-243 using installaition jig DT9024. Torque clamps as per dwg A/R Scotch-Weld DP460 Batch: 120398 EXP: 14 Mar 2013								
240	QC5- Inspect part completeness to step on W/O	0.00							
240									
QC	**Memo**	0.00							
Quality Control						AS	12-04-30		(1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D412-664-203 **Accept** *N900040100* **Setup Start** *NS1*
Revision ID: **Stop** *NS2*
Item Name: Crosstube Aft
Start Date: 13/04/2012 **Start Qty:** 1.00 *1* **Cust Item ID:**
Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1* **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** *NR1*
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250 *250* Packaging Packaging	Pick Kit	0.00						12/8/12	
	Memo	0.00							
260 *260* QC Quality Control	QC4- 100% Inspect kits for completeness	0.00							
	Memo	0.00							
270 *270* Packaging Packaging	Packaging	0.00				1X			
	Memo	0.00							

Identify and pack for shipping as per PPP D412-664-203
******Ensure tube is not packaged if curing time is less than 12 hrs, see step 27 for application time & date *******
Time & date of packaging: _____
Location: 103

8/17/04

12-05-04

Rev H

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item ID: D412-664-203
Revision ID:
Item Name: Crosstube Aft
Start Date: 13/04/2012 **Start Qty:** 1.00 *1*
Required Date: 27/04/2012 **Req'd Qty:** 1.00 *1*
Reference:

Accept *N900040100*
Setup Start *NS1*
Stop *NS2*
Cust Item ID:
Customer:

Run Start *NR1*
Stop *NR2*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
280	QC21- Final Inspection - Work Order Release	0.00					2	5	7
280									
QC	**Memo**	0.00							
Quality Control									

MF 12-05-01

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

April-13-12 12:58:38 PM

Work Order ID: 83182

83182

Parent Item: D412-664-203

D412-664-203

Parent Item Name: Crosstube Aft

Start Date: 13/04/2012 **Required Date:** 27/04/2012

Start Qty: 1.00 **Required Qty:** 1.00

Comments:
IPP Rev:E04.02.16Reformat: Added D3189-1K/DS
IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
IPP Rev:G 06.12.08 per ECN 886 EC
IPP Rev:H 07-04-30 As per Rev D JLM
IPP Rev:I 08-06-12 add comment in seq. 21 DD verified by:EC IPP rev J
11.04.21 DEO D412-664-243-E-1 EC verified DD IPP REV:K
11.10.03 DEO D412-664-243-E-2 DD verf:EC

Component Item ID / Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D412-664-203TRN		Manufactured	No			110	Each	0.0000	1	1	MO	12-4-18	
D412-664-203TRN				83180					**				
Crosstube Turning Detail													
D2896-1		Manufactured	No			230	Each	26.0000	1	1	AB	12-4-2C	
D2896-1									**				
Support				71502	74465					1			

Location	Loc Qty	Loc Code
LG052	8	
80586	8	
LG053	18	
74465	18	

Component Item ID / Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D3189-1		Manufactured	No			230	Each	20.0000	2	2	AB	12-4-2C	
D3189-1									**				
Chafing Shield													

Location	Loc Qty	Loc Code
FG	4	
36065	4	
LG052	16	
81060	16	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

April-13-12 12:58:38 PM

Work Order ID: 83182 *83182*

Parent Item: D412-664-203 *D412-664-203*

Parent Item Name: Crosstube Aft

Start Date: 13/04/2012 **Required Date:** 27/04/2012

Start Qty: 1.00 **Required Qty:** 1.00

D3595-063-570	Manufactured	No		230	Each	89.0000	2	2

D3595-063-570

RUBBER CUSHION

**

AR 12-4-26

Location	Loc Qty	Loc Code	
FG	8		
37971	1		
42243	7		
MAT052	81		
71534	4		1
76546	77		1

MS21920-28	Purchased	No		230	Each	79.0000	4	4

MS21920-28

Clamp(per MIL-DTL-8783C)

**

AR 12-4-26

Location	Loc Qty	Loc Code	
FG	5		
105884	5		
LG050	74		
116839	2		
118713	4		
120054	2		
120884	16		4
121067	50		

MS21920-30	Purchased	No		230	Each	62.0000	2	2

MS21920-30

clamp(per MIL-DTL-8783C)

**

AR 12-4-26

Location	Loc Qty	Loc Code	
LG	48		
119529	48		2
LG051	14		
111258	14		

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID: 83182
Parent Item: D412-664-203
Parent Item Name: Crosstube Aft

83182
D412-664-203

Start Date: 13/04/2012 **Required Date:** 27/04/2012
Start Qty: 1.00 **Required Qty:** 1.00

AN6-40A	Purchased	No		250	Each	97.0000	4	4
AN6-40A							**	
Bolt								

Location	Loc Qty	Loc Code
ST342	97	
120187	68	
120833	4	
121349	25	

AN6-41A	Purchased	No		250	Each	59.0000	2	2
AN6-41A							**	
Bolt								

Location	Loc Qty	Loc Code
ST342	59	
119749	8	
120187	1	
120423	50	

AN960JD616 NAS1149D0663J	Purchased	No		250	Each	0.0000	18	18
AN960JD616							**	M121243
Washer								
MS21042L6	Purchased	No		250	Each	782.0000	6	6
MS21042L6							**	
Nut								

Location	Loc Qty	Loc Code
ST300	782	
117677	25	
118384	3	
118927	48	
119075	506	
120308	200	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

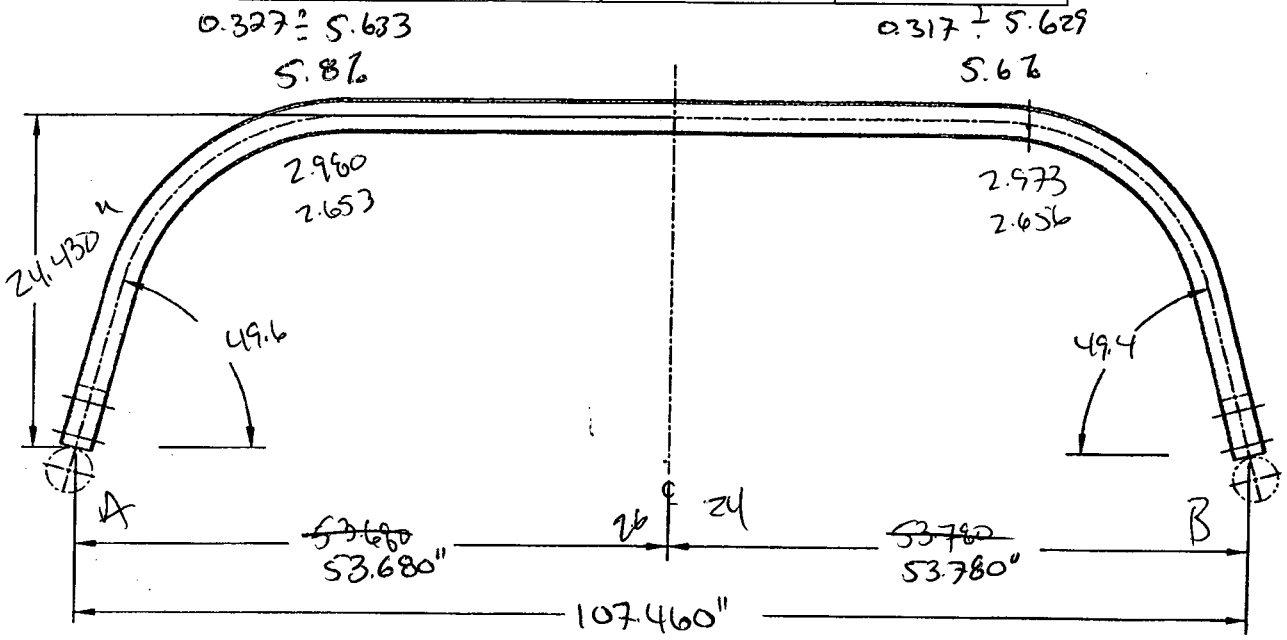
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	83182
Description: Crosstube High Aft (412)	Part Number:	D412-664-203
Inspection Dwg: D412-664-243 **Rev:** E		Page 1 of 1

Required Dimension	Min	Max
Height	24.24	24.50
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments
Side A = 5.8% crushing @ 26 Passes
Side B = 5.6% crushing @24 Passes

QC15 Inspection	
Date	12/4/19

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. D	KJ/JLM	
C	10.02.02	Dwg Rev updated	KJ	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item	Qty -243	Part Number	Description
1	X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 83182 MCJ
12/04/13

② DEO'S ATTACHED

RELEASED
2009 -10- 29

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6009-129
   FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
7) WEIGHT: 47.0 lbs (PER IIN-D212-664)
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
13) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

REV.	DESCRIPTION	BY	DATE
E	REFORMAT/REVISE GENERAL NOTES; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	09.09.30
D	REMOVE D2732-058, CHANGE TO D3595-063-570	PH	07.03.09
C	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398, MS21920-32 WAS MS21920-30	MB	06.10.27
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	01.10.17

DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D412-664-243	SHEET 1 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30		

COPYRIGHT © 2001 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

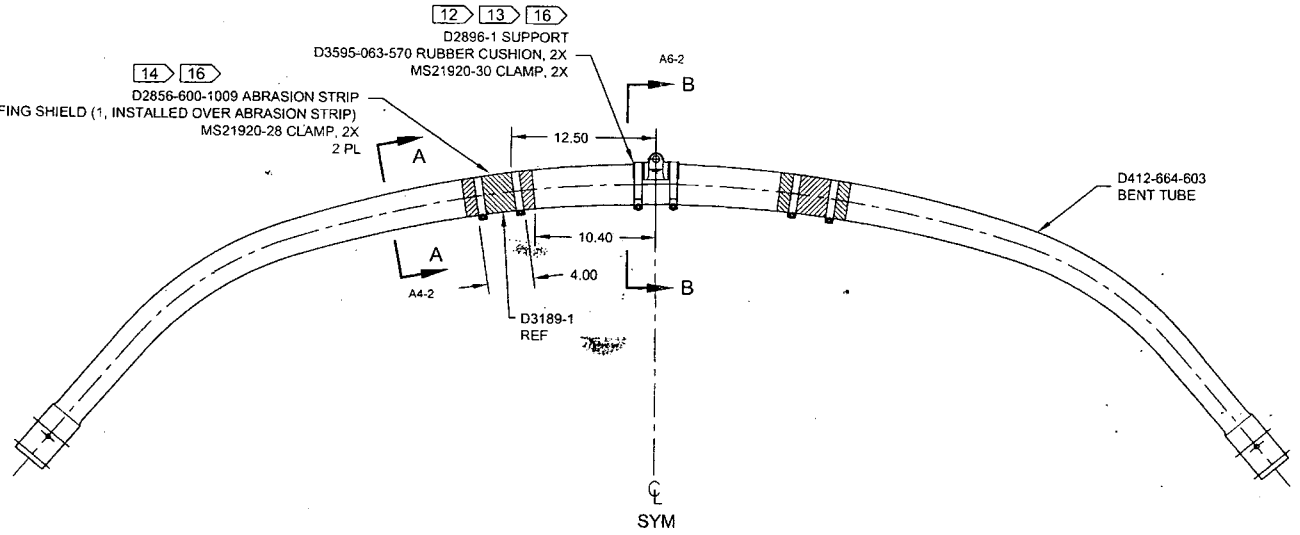
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

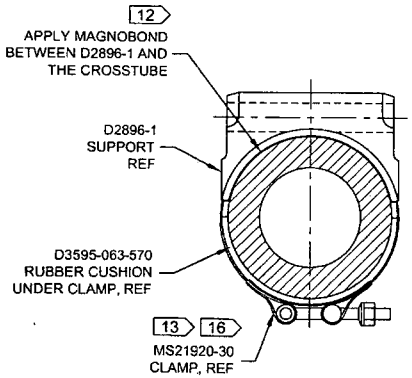
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

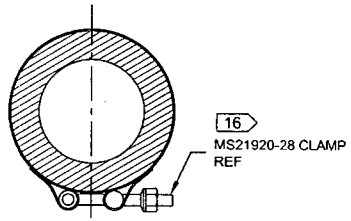
NOTE: Date & initial all entries



D212-664-243
ASSEMBLY DETAIL (E)



SECTION B-B D4-2
SCALE 4X



SECTION A-A C6-2
SCALE 4X

83182

② DEO 13 ATTACHED

RELEASED
2009 -10- 29

DESIGN	PH	**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D412-664-243	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30		

COPYRIGHT © 2001 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

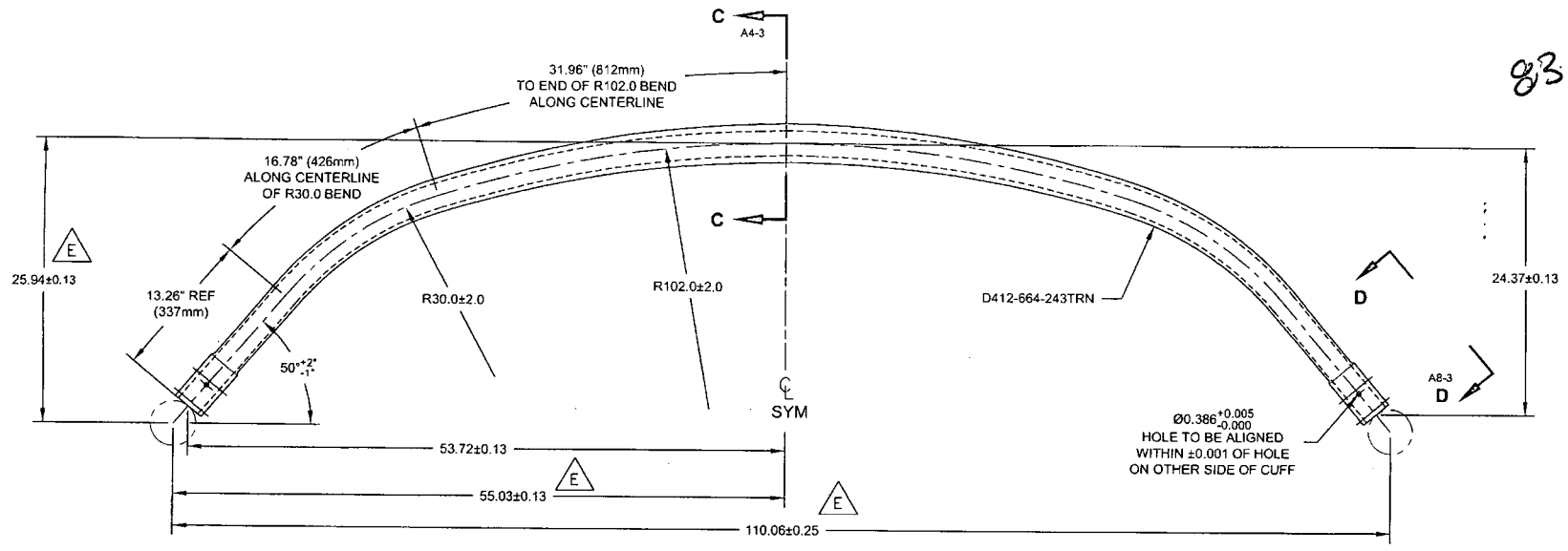
Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

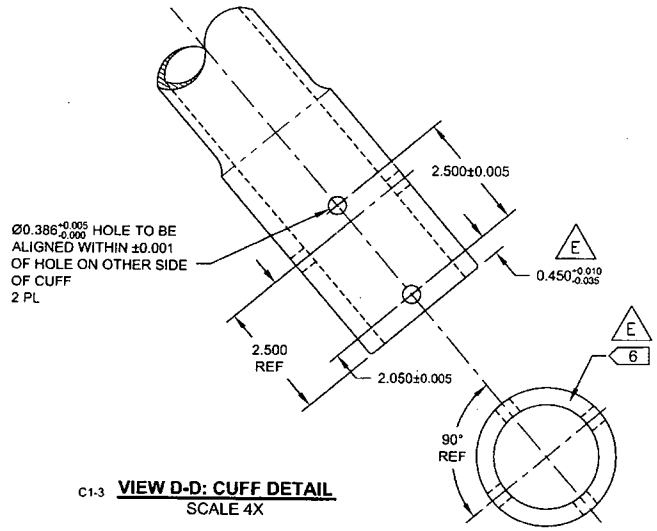
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

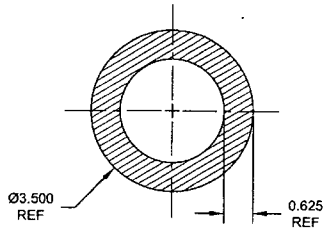
83182



D412-664-603 10
BENDING AND DRILLING DETAIL E



C1-3 **VIEW D-D: CUFF DETAIL**
SCALE 4X



SECTION C-C D5-3
SCALE 4X

② DEO'S ATTACHED

RELEASED
2009-10-29
MP

DESIGN	PH	**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D412-664-243	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30		

COPYRIGHT © 2001 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

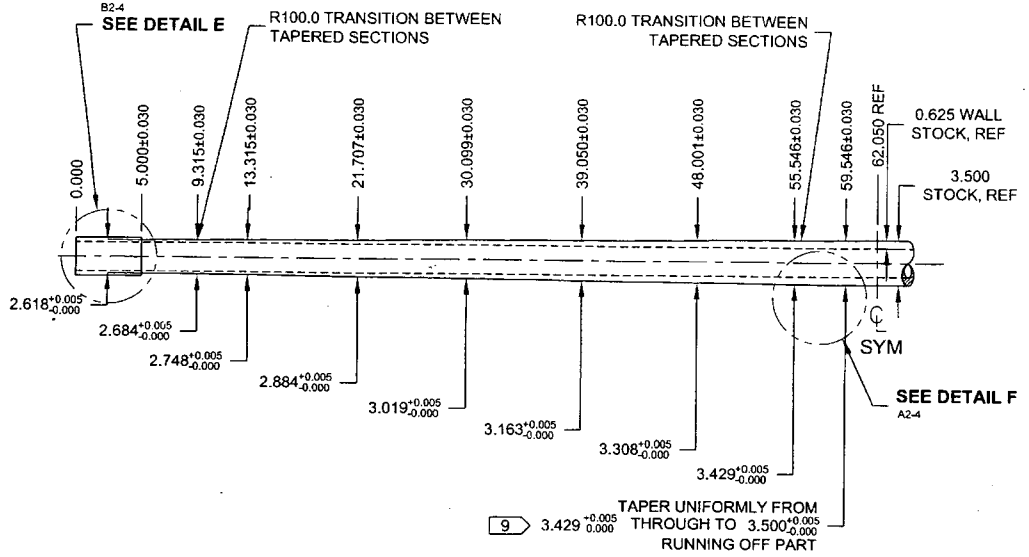
W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

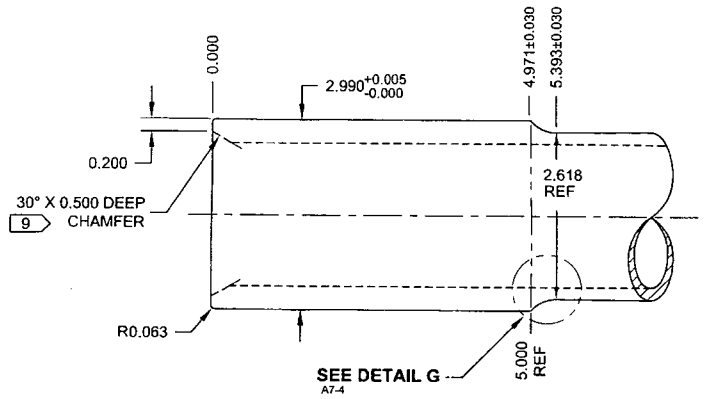
Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

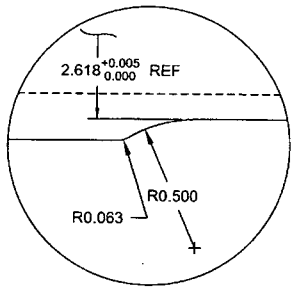
NOTE: Date & initial all entries



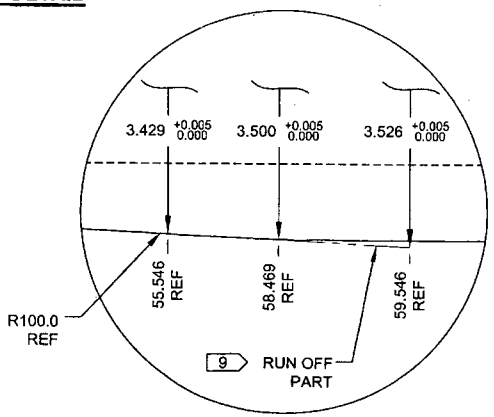


DETAIL E:
CROSSTUBE CUFF D8-4
SCALE 5X

D412-664-243TRN (E)
TURNING DETAIL



DETAIL G:
CUFF TRANSITION C2-4
SCALE 10X



DETAIL F:
TAPER RUN-OFF C4-4
NOT TO SCALE

DESIGN	PH	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	
CHECKED		DRAWING NO. D412-664-243 REV. E SHEET 4 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASSEMBLY (412 HI AFT) SCALE NTS
DE APPR.		
DATE 09.09.30		

COPYRIGHT © 2001 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

② DEO ATTACHED

RELEASED
2009 -10- 29

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DRAWING NO.	TITLE	REV. E	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-664-243	CROSSTUBE ASSEMBLY (412 HI AFT)		ENGINEERING ORDER	D412-664-243-E-1	SHEET 1 OF 2	NTS

DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.
DATE 11.03.31	DATE 11/03.31	DATE 11.03.31	DATE 11/03.31	DATE 11.03.31

PURPOSE:
REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

03182

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -243	Part Number	Description
6	0	D2856-600-1009	ABRASION STRIP

WAS:

6	2	D2856-600-1009	ABRASION STRIP

NOTES 2 AND 14, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA)
PAINT OUTSIDE PER DART QSI 005 4.2
AFTER PAINTING, APPLY CLEAR COAT ON HATCHED AREA

14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

RELEASED
2011-04-07

WAS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2

14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.

COPYRIGHT © 2011 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DRAWING NO.	TITLE	REV. E	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO.	SHEET NO.	SCALE
D412-664-243	CROSSTUBE ASSEMBLY (412 HI AFT)			D412-664-243-E-1	SHEET 2 OF 2	NTS
DRAWN	CHECKED		MFG. APPR.	APPROVED	DE APPR.	
DATE 11.03.31	DATE 11.03.31		DATE 11.03.31	DATE 11.03.31	DATE 11.03.31	

83182

IS:

<16> <14>
D3189-1 CHAFING SHIELD (1, INSTALLED OVER PROSEAL 890)
MS21920-28 CLAMP, 2X
2 PL

D412-664-603
BENT TUBE

2.00
1.00

WAS:

<14> <16>
D2856-600-1009 ABRASION STRIP
D3189-1 CHAFING SHIELD (1, INSTALLED OVER ABRASION STRIP)
MS21920-28 CLAMP, 2X
2 PL

D3189-1
REF

D412-664-243
ASSEMBLY DETAIL

RELEASED
2011-04-07

<2>
MASK AREA PRIOR TO PAINTING AND
APPLY CLEAR COAT AFTER PAINTING

2.00

℄
SYM

COPYRIGHT © 2011 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DRAWING NO.	TITLE	REV. E	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-664-243	CROSSTUBE ASS'Y (412 HI AFT)		ENGINEERING ORDER	D412-664-243-E-2	SHEET 1 OF 1	NTS

DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.
DATE 11.09.07	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19

93182

PURPOSE:
REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

CHANGE:

IS:

Item	Qty -243	Part Number	Description
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 16, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

12) INSTALL D2896-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.**

WAS:

12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-09-29

COPYRIGHT © 2011 BY DART AEROSPACE LTD
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**		**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

ACUREN

LIQUID PENETRANT TEST REPORT

P# 05643

PAGE 1 OF

CLIENT DART AEROSPACE — DATE 4/12/2023 — TIME AM ☑ PM ☐

ATTENTION LYDIA, CHANCE, MATT — ACUREN JOB NO. 133-13-CC114

ADDRESS 1270 ABERDEEN ST. HAMILTON, ON — PO/WO NO.

WORK LOCATION AS ADDRESS

ACCEPTANCE STD. ASTM E1417/E1417M-13 CLASS — REV./DATE 2005

PROJECT LIQUID PENETRANT WET FLUORESCENT

ITEM(S) EXAMINED See Below

JOB DESCRIPTION — PROCEDURE NO. LT-CC2 REV./DATE 2013 — TECHNIQUE NO. LT-CC2 REV./DATE 2013

PART NO. — MATERIAL Anodized Aluminum — THICKNESS .040

SCOPE Performed a wet fluorescent liquid penetrant on 100% of the machined surface.

TEST DETAILS

METHOD	☑ FLUORESCENT	☐ VISIBLE		☐ WATER WASH	☐ SOLVENT REMOVABLE	☐ POST EMULSIFIED	
FAMILY BRAND	MAGNAFLUX			BLACK LIGHT S/N	16459	☑ OUTPUT > 1000 µ W/CM²	☐ AMBIENT < 2 fc
PENETRANT	ZL-27	MINIMUM DWELL TIME	45	MIN.	LIGHTING EQUIP.	☐ FLASHLIGHT	☐ TROUBLELIGHT ☐ OUTPUT>100 fc @ SURFACE
PENETRANT REMOVER	H2O	MINIMUM DRY TIME	>10	MIN.	OTHER	HABNO	
DEVELOPER	SKD-S2	MINIMUM DWELL TIME	10	MIN.	LIGHT METER S/N	10938-6	CAL DUE DATE 6/9/2023
DEVELOPER TYPE	☑ NON AQUEOUS	☐ AQUEOUS	☐ DRY				

TEST SURFACE

SURFACE CONDITION	☐ AS GROUND	☐ AS WELDED	☑ MACHINED	☐ SHOT BLASTED	☑ CLEAN BARE METAL
SURFACE TEMPERATURE	☐ < - 4°C/ 20°F	☐ - 4°C/ 20°F TO 10°C/50°F	☑ 10°C/50°F TO 52°C/125°F		☐ > 52°C/125°F

RESULTS- (☐ METRIC ☑ IMPERIAL)

ITEM #	COMMENTS	ACCEPT/REJ	ITEM ID	
1	Chassis WO ID 83132 LX	✓	ITEM ID: D412-664-203	AFT
2	" WO ID 83183	✓	ITEM ID: D412-664-203	AFT
3	" WO ID 83058	✓	ITEM ID: D212-664-101	FWD
4	" WO ID 83059	✓	ITEM ID: D212-664-101	FWD
5	" WO ID 81796	✓	ITEM ID: D206-667-207BL	AFT
6	" WO ID 81797	✓	ITEM ID: D206-667-207BL	AFT
7	" WO ID 81270	✓	ITEM ID: D212-664-101	FWD
8	" WO ID 81270	✓	ITEM ID: D212-664-101	FWD

NO RELEVANT INDICATION WAS DETECTED AS PER APPLICABLE STANDARD AT THE TIME OF INSPECTION

5/7/2023

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE: Matthew Murdoch (PRINT) — Matthew Murdoch (SIGNATURE)

TECHNICIAN (SIGNATURE):

NAME (PRINT): JAMES DESROSIERS (1ST TECHNICIAN)

1ST TECHNICIAN: CGSB LEVEL 2 SNT LEVEL 2 CGSB REG. NO 3-19

2ND TECHNICIAN: CGSB LEVEL — SNT LEVEL — CGSB REG. NO

DTR # E 34989

REPORT REVIEWED BY:

NAME	INITIALS

WHITE – CLIENT COPY CANARY – OFFICE COPY PINK – TECHNICIAN COPY GOLD – OFFICE COPY

REFERENCE ONLY

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	-101	-201	-203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21042-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21042-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21042-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

*REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE
NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.

• COPYRIGHT © 2001 BY DART AEROSPACE LTD •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector
12.05.03	200/ 210	Apply clear coat to entire outside surface of crosstube except mask off area of support.				GP 12.05.03 QS7042	

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries